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STEM RUST AND BARBERRY NEWS

Issued by
Office of Barberry Eradication

Volume I

July 10, 1930

Number 5

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Bureau of Plant Industry
U. S. Department of Agriculture

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BARBERRIES OR PASTURE LANDS

"Those barberries are robbing me of my pasture lands, worse still, the spines on the bushes injure the cow's udder. How can I get rid of them?" We were standing on a rocky hillside pasture in Massachusetts and on every side were surrounded by thickets of barberries, many of them 10 feet high and of corresponding girth. Not far away was a farm house built in 1699 when this section was originally settled and barberries were given a start. This pasture and numerous others in the vicinity bore witness to the extent to which the common barberry spreads if left alone. With great effort this farmer was grubbing bushes out with ax and shovel. Some of his neighbors had tried burning. Sprouts were abundant.

On traveling through New England I am impressed by the prevalence of the common barberry. If bushes had been allowed to spread in the North-Central States in a similar fashion, the grower of small grains would have but little chance against rust. Barberry eradication means much for the grain growers of the future as well as the present.

F. C. M.

AVOID SNAKE BITES

Field men should take every precaution against snake bites. High leather boots or leather puttees with stout shoes, while they will not prevent injury, give some degree of protection and field men should wear these when working where snakes are likely to be encountered. Low shoes and overalls or ordinary trousers should not be worn in snake infested country.

Barberry Field Offices have been supplied with a sufficient quantity of Bureau of Biological Survey mimeographed leaflets 571 to

enable each squad leader to have one. This is a revised edition of the paper entitled Poisonous Snakes of the United States which was sent to these Offices earlier in the spring. Each squad leader should study this paper and instruct the field men with regard to methods of avoiding injury and taking care of snake bites if any of the men are sufficiently unfortunate to experience such injury.

F. C. M.

EPIDEMIOLOGY

(Reported by Miss Laura Hamilton)

North Dakota - By July 1 stem rust could be found in a few fields of wheat in the Red River Valley to the Canadian border. South of Jamestown, there was a trace as far west as the Missouri River, with a prevalence of 10 per cent on June 27 in the fields between Fredonia and Ashley. Elsewhere the prevalence, according to Mr. Ukkelberg, was not more than 2 per cent or only a trace. In the Red River Valley south of Fargo, both in North Dakota and Minnesota, rain is needed and there is practically no rust. In southeastern North Dakota by the end of June wheat ranged from heading to flower, while in the northern part of the Valley the stage was boot to heading. Observations were not made west of the Missouri nor, outside of the Valley, north of Jamestown.

South Dakota - On the basis of observations made in northeastern and south-central South Dakota during the last week of June, Mr. Butler predicted that with continued dry weather the Marquis fields he had examined would probably mature without much damage. He stated, "there appears to be enough inoculum in most Marquis fields to be a menace should stem rust development be rapid.... Conditions on the whole appear more in favor of grain than of rust, although moisture in the form of rain and dew has been sufficient this week to permit of rust reproduction." Nights were cool and daily temperatures moderate. Secondary infection had developed in practically all fields in centers of less than a dozen culms each, so that the average infection, according to Mr. Butler, was one pustule to 2 per cent on 5 to 10 per cent of the plants. In the northern part of the State wheat was heading or in flower on June 26, and in flower or milk in the central part on the 28th. Barley was as far advanced, and oats one stage later. Where there is stem rust on wheat, barley also is fairly generally infected, and according to Mr. Bulger, there is a trace of stem rust on oats. He states also that stem rust has been observed in a few fields of rye in the southeastern section.

In Lyman County, when Mr. Butler made observations on June 28, the type of infection was different: secondary infection was difficult to find, but on 50-75 per cent of the culms there were 1 to 4 or 5 pustules, some of them not yet broken through the epidermis. "This high prevalence could be accounted for only on the basis of a second heavy spore shower, but recent observations have not been made in the southernmost section.

over the area." A trace of stem rust also was found on durum wheat and barley in Lyman County.

Minnesota - Conditions in southern Minnesota appear to be comparable with those in South Dakota east of the Missouri River, Secondary infection, according to Dr. Melander on June 28, and also according to Dr. Cotter, being largely restricted to centers about a rod apart. No evidence has been obtained of a second spore shower, but recent observations have not been made in the southernmost section.

Nebraska - In eastern and central Nebraska, according to Mr. Yount on June 28, "Damage to wheat will be rather restricted because of crop maturity." On "late oats and barley there is sufficient infection to cause considerable damage with more favorable weather conditions." Winter wheat in the western part of the State was near maturity, according to Mr. Lungren and "will escape rust damage."

Identification of physiologic forms is progressing. Form 38 was identified in about a dozen Mexican collections and forms 59 and 66 in half a dozen each. None of these forms attacks Marquis severely, and the durums also are somewhat resistant to 59 and 66. Although these results are only preliminary they indicate that Mexico, as in previous years since the survey was begun, may not have contributed appreciably to the epidemic in the spring wheat area.

EASTERN REGION

Ohio - 8 East Broad Street, Columbus - Harry Atwood

During the month of June, 565 barberry bushes and 6,970 seedlings were found and destroyed by the barberry field men on second survey of 20 per cent of the area of Montgomery County. Records were made for 138 city properties and 17 rural properties. Forty-three escaped bushes were found on 8 properties.

A roadside sign, placed beside a barberry bush just out of Dayton on a main traveled highway, has been of much aid in helping the farmers in that vicinity to recognize the bush.

A potted barberry and posters have been placed in the towns where our crews are working. At West Carrollton a display has been set up in the local bank. At Germantown the field men have a demonstration in the post office. The crew which moved from Dayton to Miamisburg this week are planning a demonstration there. They have arranged with the local theater for the showing of the film "Banishing the Barberry."

The Science Department of Western Reserve Academy has requested lesson plans and material to present to a class of 20 teachers this week. They are also planning to show the film entitled "Rust" to this group of teachers.

Mr. H. R. Offord has started the work of experimenting with different chemicals on barberry bushes, in a number of plots in an area of escaped barberries near Maumee. Messrs. Draper and Hungate are observing and collecting data on these experiments.

On June 25 stem rust was found on timothy near Dayton and on June 28 infection was found on rye near West Carrollton. It is estimated that damage from stem rust this year will be less than 1 per cent in the State as a whole. However, in some fields near barberry locations the loss will be as much as 3 to 5 per cent. Wheat has been cut in the southern half and is ripening in the remainder of the State.

Indiana - Agricultural Experiment Station, La Fayette - Wayne E. Leer

Messrs. Meier and Popham were in the field June 21 to 25. Areas of escaped barberries in Fountain, Lawrence, Dearborn, Rush, Henry, Wayne, and Hamilton Counties were examined. The field men were met at Richmond in Wayne County and their work inspected. Many fields of wheat were examined in the counties named but very little stem rust was found. In many fields it was impossible to find even a single pustule of stem rust.

The first of a series of four radio talks over station WFBM Indianapolis was given June 26 by Stanley Castell. The next talks are scheduled for July 3, 10, and 17 over this station.

The systematic survey of Bartholomew and Decatur Counties was started July 2.

The field men assembled at LaFayette, July 1, for a one-day school of instruction. Interesting and inspiring talks were given these field men by Director J. H. Skinner and others. The field men left headquarters full of enthusiasm and renewed confidence in the barberry eradication campaign.

During June, the field men worked in areas of escaped barberries in Dearborn, Harrison, and Wayne Counties. In Dearborn County, 115 bushes were destroyed on 8 properties. In Harrison County, 9 bushes were destroyed on 4 properties, and in Wayne County, 1,559 bushes were destroyed on 45 properties, making a grand total of 1,873 bushes on 108 properties to date this year.

Illinois - Box 72, Post Office Building, Urbana - Robert W. Bills

The force of barberry eradication field men reported for duty on June 12. The day was spent in discussion of the campaign, survey methods and problems, publicity, reports, and fiscal matters. Dr. J. J. Pieper, of the College of Agriculture, Mr. Phil S. Haner, Superintendent of the Division of Plant Industry, Illinois Department of Agriculture, and Mr. P. A. Glenn, Chief Plant Inspector assisted in the program.

On June 13 the men departed for their assigned territory in southern Illinois. Four men were assigned to each of seven counties; Gallatin, Hardin, Jackson, Johnson, Pope, Saline, and Union, and 6 men to Williamson County. The State Department of Agriculture employed 8 of the field men and furnished three automobiles.

Good progress is being made with survey work in the southern counties. Weather has been dry and this has allowed travel on many of the hilly roads which would be impassable after rains.

Stem rust is being found in small amounts in southern Illinois on late maturing plants in some fields of winter wheat. Harvest is practically complete in the extreme southern counties. A small acreage of oats is grown and the crop will be light due largely to the dry weather which has prevailed this spring.

First survey of the State will probably be completed by August 1. Areas of escaped bushes in Lake County will occupy the time of several field men after August 1, and other men will continue the second survey of Stephenson, Kane, and DuPage Counties.

Plans are under way for the preparation of a small fair exhibit to be added to the exhibits to be made and circulated among the county fairs of Illinois by the Illinois Department of Agriculture. A larger exhibit will be made for the State Fair in August.

Michigan - Agricultural College, East Lansing - Francis B. Powers

The second survey in Allegan County has been abandoned for the remainder of this year to permit the organization of permanent squads for first survey work in Leelanau and Presque Isle Counties in the northern part of the lower peninsula. Since May 1 a total of 6,260 bushes and 11,385 seedlings have been removed or killed by a squad under the leadership of H. S. Hunter in Allegan County.

On June 23 a conference composed of the 30 field men and several others cooperating in the Barberry Eradication campaign was held at Michigan State College. Following the conference the men left for their assigned fields. The men at Maple City reported eradication

of 32 bushes and 1,000 seedlings. In Presque Isle County no barberries have been found except in the towns.

Weather conditions have been varying between sultry days followed by storms and cool clear days with westerly winds.

Barberries in both Leelanau and Presque Isle Counties have been heavily rusted and at Onaway the men collected and pressed several thousand specimens for specimen envelopes. Salisbury reports traces of stem rust on oats near Suttons Bay. McIntyre reports spreads from barberries to quack grass in Leelanau County. Leaf rust is becoming general everywhere.

In the northern counties of the lower peninsula oats are flowering, wheat is from milk to soft dough, and rye is ripening. In the southern counties some winter wheat is ripening.

Wisconsin - State Capitol Annex, Madison - Ralph M. Caldwell

Field work is now in progress in 5 Wisconsin Counties. A 6-man squad is stationed in each of Green, Jefferson, Ozaukee, and Rock Counties. In the first mentioned 3 counties, work is being limited to rather extensive areas of escaped bushes. The squads are beginning at the centers of infestation and will work to a safe distance in all directions beyond the points at which bushes can be found.

The squad of 12 men composed of 2 foremen and 10 local men at Black Earth, Dane County, have operated very satisfactorily considering the fact that, but the foremen, all were wholly inexperienced at the outset. From June 16 to 28 a total of 2,831 bushes and seedlings was killed in this area by application of 27,500 pounds of salt.

Weather conditions have been almost ideal for small grains which have developed unusually well thus far. A noticeably large acreage of barley is being produced this year.

Stem rust spreads from barberry to grain have been found in a number of locations. As yet they have made no extensive development. During the week of June 22-28, a very generally distributed primary stem rust infection on barley and spring wheat was observed over the southern half of the State. Single pustules on barley and spring wheat could be found in most all fields, but only with difficulty. Oats appeared to be almost wholly free of rust.

Winter rye and winter wheat were more severely rusted, the infection seeming to have developed beyond the primary stage as was found in the spring grains.

During the latter part of June, educational work was begun with the 4-H Club camps. Mr. Ullstrup gave a talk and demonstration at 3 of the larger club camps in the State. The motion picture "Rust", which was shown at the southern area camp at Madison, was quite enthusiastically received.

WESTERN REGIONMinnesota - University Farm, St. Paul - Leonard W. Melander

The beginning of the intensive second survey season this year was June 23. On that date 11 men were placed in the field, 6 in Scott and 5 in Dakota Counties. These men worked for one week on this arrangement, and on July 1 they reported to headquarters where the crews were reorganized.

The program for July 1 was as follows: the men were given instructions by the Barberry Leader then the whole group proceeded to an area of escaped barberries east of the Rum River in Anoka County. The new men were given instructions in finding barberries under various conditions. A picnic dinner was served at noon. In the afternoon Dr. E. M. Freeman gave an inspirational talk on the development of the barberry campaign and the responsibility which the field agents assume when they go out to work on barberry eradication. Later the whole group was split into two groups, one group spent an hour scouting and the other salting. Then they changed places. This gave the new men experience both in treating and scouting for barberry. In this location there were barberry bushes of all sizes including seedlings growing under trees and bushes especially Juniper communis. At 4:00 p.m. the whole group proceeded to their locations in the field.

Our educational and publicity campaign has been very active during the past few weeks. Mr. Ingwolson, our publicity man, assisted by the Leader and the assistant leader have talked to 3,300 boys and girls in eleven 4-H Club camps and short courses. We are stressing particularly the medal feature. This seems to interest all the boys and girls, and at some of these camps there are already some who have won medals. This was especially true at Frontenac where a boy was wearing his medal, and it was being admired by all the other boys. Another feature of the publicity and educational activities has been talks given at County Farm Bureau picnics. The Leader spoke at the county picnics of Hubbard and Rice County Farm Bureaus, and the publicity man spoke at the farmers' picnic of Morrison County. The aggregate attendance at these picnics was 1,600. At all of these gatherings much favorable interest was manifested in barberry eradication.

The grain and rust are beginning to run a race. The main feature of the rust situation in Minnesota is the presence of infection centers. The interesting part of this is that the secondary and tertiary infections seem to be developing very slowly and have not been developed very extensively. No rust has been found above the second joint of the stem. In the southern half of the State all the spring grains are past the blossoming stage. It is hoped that we will be able to trace out several stem rust spreads from barberry bushes within the next two weeks.

Iowa - Morrill Hall, Iowa State College, Ames - D. R. Shepherd

Farm-tofarm second survey has been done during the past two weeks in Kossuth County. Farm-to-farm third survey work has been done in Emmet, Dickinson, and Osceola Counties. Areas of escaped barberries have been cleaned up in Boone, Butler, Hardin, Worth, Black Hawk, and Marshall Counties. The actual survey work in Iowa is centered in 4 northwestern counties. In this region the small grains were grown more extensively than in any other region of the State.

During the past 2 weeks considerable educational work has been done. Demonstrations were held at two Farm Bureau picnics, one at Algona where approximately 3,000 people were met in conference, and one at Sibley where about 300 people were met. A lantern slide supplemented by a talk by the assistant leader was presented at 3 Farm Bureau meetings in Kossuth County. These meetings generally end up in a round-table discussion wherein the farmers ask questions and either the leader or the assistant leader are there to answer them. We feel that we have made some very important contacts through these Farm Bureau district meetings. Talks have also been presented at weed meetings in Emmet and Osceola Counties. The story of black stem rust and the common barberry was presented to a small group of 4-H boys at a local club meeting in Emmet County during the week of June 18.

Since June 12 on second, third, and clean-up survey work, 1,905 bushes and 10,536 seedlings have been found. These have been found on a total of 71 bush properties and 11 seedling properties. The Leader spent some time in the field checking the progress of black stem rust, and also in making contacts with county agents en route.

Observations made throughout different sections of Iowa, especially the north and western parts, revealed only slight infection of black stem rust. Pustules could be found in practically every field of wheat, and in most all fields of oats and barley. In most cases only 2 or 3 pustules could be found after spending considerable time in the field. The infection has ranged from a trace to 20 per cent on from 1 to 100 per cent of the stems. This indicated that the infection may have spread from barberries located in that area. Leaf rust on wheat, oats, and rye is prevalent, ranging from a trace on 1 per cent of the leaves to as high as 70 per cent infection on 80 per cent of the leaves. That was true mostly of orange leaf rust. Crown rust could be found only sparingly in most fields. In Plymouth County, a stem rust infection of 20/60 was found in an oat field. This rust was found near the Sioux River. Consecutive observations traveling away from the River revealed a much lighter infection.

During the next 6 weeks a series of 4-H girls clubs will be visited by the Leader who will present the subject - Barberry Eradication and Stem Rust - to these groups. The project will be a give-and-take proposition wherein the Leader will teach a class in making of a flower garden. It will be possible in these classes to teach the identification of the

common and Japanese barberries. Besides this classroom work we will be allowed 30 minutes on the general assembly program to present our subject. We are hoping that this project this summer will be a starting point for future work with 4-H Clubs.

District No. 1 - State College Station, Fargo, N. Dak. - G. C. Mayoue

Montana - One squad has been stationed in Yellowstone County. They began strip scouting along the Yellowstone River near Huntley. According to records several original plantings of barberries were located a few years ago on farmsteads near this river. Therefore, there are good possibilities of finding seedlings. In fact, barberries were reported to the agent in charge of the demonstration held in connection with the Billings fair last fall. Another squad has been located in Carbon County near Red Lodge, where the men started a regular farm-to-farm survey and have already found several seedlings on an old property near Fromberg.

As stated in a previous report. Mr. James T. Bradbury, the assistant leader in Montana, began his duties on June 16. The District Leader met and instructed all of the agents while he was at Bozeman during the first week of June.

According to a recent report covering the counties in which the agents are working, there has been no precipitation during the past couple of weeks. Most of the crop, including wheat, oats, and barley, is headed out and some of the wheat is in the blossom and soft dough stage.

North Dakota - A demonstration placed at the Northwest State Fair at Minot, which is going on at the present time, is attracting attention.

Mr. Joyce O. Roberts, who has assisted with the publicity and education as well as other activities in North Dakota during the past four seasons and three winters, is the assistant leader in North Dakota.

Field survey has been going on in McLean County since May 5. Considerable time has been devoted to strip scouting the Snake Creek and other tributaries of the Missouri River adjacent to which old barberry plantings were located several years ago. During June a total of 125 seedlings was located within two miles of each of three original plantings. County agent Norling has been giving the agents very good cooperation. To date not a single one met in the course of the work in that county has manifested opposition. Business men, particularly at Wilton and Washburn, have shown a great deal of interest in the survey and have offered to cooperate with the agents in any way possible. The Leader believes this attitude is largely due to the results of an

interesting meeting held last October in McLean County in connection with the livestock show at Washburn. Also, the people of that community are interested because of the fact that a large find of barberries was made last season near Washburn, just across the river from McLean County.

Wyoming - Field survey is scheduled to begin in Crook County in the extreme northeast corner on July 7 with the two men stationed near Newcastle for a few weeks.

District No. 2 - Box 66, State College Station, Brookings, S. Dak., -
Raymond O. Bulger

With 36 men actively engaged in barberry eradication in District No. 2 the work is progressing nicely in 8 different counties. In general the field men are receiving splendid cooperation. No real opposition has been encountered and the owners on whose properties bushes have been found have been very willing to have them eradicated.

A barberry find of special significance was made recently in Davison County, South Dakota. This county has been the apparent center of a heavily rusted area for the past several years. It was upon this observation that third survey was undertaken in this county. Six large, heavily infected barberries were found in a community where stem rust has appeared early and where the infection has been extremely heavy in the past. It is believed that these bushes were responsible for the trouble.

Another find was made in Aurora County, South Dakota. The squad leader reported that the bushes were so heavily infected that he immediately cut them down and burned them to prohibit further spread of stem rust. Several barberry plantings of importance have also been found in Nebraska.

Marion E. Yount, formerly assistant leader in Iowa, began work as assistant leader in Nebraska. Mr. Yount will assist especially with the educational phases of the campaign and will, in general, supervise the work in Nebraska in the absence of the District Leader. With his past experience in educational work, great progress is expected in this State in the future.

George M. Frandsen, assistant leader in South Dakota has been engaged in educational work in his State. He has a schedule of talks at normal school and other college summer sessions, and also talks at Agronomy field days that will keep him busy until about July 20. He began this schedule June 24. In addition to his talk the two-reel film "Rust" is being shown at the summer school sessions.

To date (July 2) stem rust can be found quite generally in District No. 2. While it is too early to estimate the probable damage, it is believed

that the loss will be no greater than usual. Winter wheat is practically safe in Nebraska. Some loss may result to spring wheat in South Dakota, a great deal depends upon weather conditions until harvest time.

District No. 3 - Agricultural College, Ft. Collins, Colo. - E. A. Lungren

During the month of June more than 400 common barberries were eradicated from El Paso County, Colorado. A large number of these were escapes growing along the creek which runs through Monument Valley Park, Colorado Springs, Colorado. One bush was the largest ever found in this State, having a leaf area sufficient to rust the whole county or even the State. Light infection was found on this bush. The city of Colorado Springs furnished us two men and a Dodge truck to get the bushes out. It took all the man power and truck power to get some of them out, especially those which were hidden among other shrubs.

On another property in the city of Colorado Springs a barberry nursery was found. At Colorado Springs the owner of a large estate had made a hobby of collecting species of barberries from all over the world. He had some from China, and Japan. Our list of susceptible barberries from Dr. Stakman and Dr. Cotter surely helped out. Practically every bush the owner had in his garden was on the susceptible list and was condemned. He was very nice about it and was unaware of the danger of his plants being rust spreaders.

The amount of shrubbery in this territory makes scouting very difficult, however, the finding of barberries makes the situation more interesting.

Considerable newspaper publicity has been given to the work in that county. The newspaper has used our cuts and have given several stories. Demonstrations have been placed in several windows.

The amount of stem rust in Colorado this year is slight. Only a trace has been observed in eastern Colorado on the winter wheat and at present it is past the danger stage. The spring wheat is now in the milk stage and lately we have been having warm showers which look inducive to uredinial germination.

In western Nebraska second survey has been centered in Scotts Bluff County. The squad leaders have sent out their circular letters and are now going over the ground. They started in the western part and are working east. No barberries have been found to date, however, they expect to make some findings as they near Scotts Bluff. Stem rust has been very light in the winter wheat.

July first our work started in Wyoming. A conference was held in the morning at Fort Collins. The team then started for Torrington in the North Platte Valley to begin survey work.

Personnel

Word has just been received from Harry Atwood in Ohio regarding the death of S. Pryor Pickering who died Monday evening at the Miami Valley hospital, Dayton, Ohio. Mr. Pickering was spending his third season as a field agent in barberry eradication in Ohio.

Mr. Pickering was a graduate of DePauw University, received his M. A. at Cornell University Medical School and for the past year has attended Harvard University.

The Office of Barberry Eradication and his fellow workers extend sympathy to the family.